



Experiments using climatological as well as predicted aerosols in both, an aerosol-aware convective parameterization, and a double moment microphysics scheme

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The Next Generation Global Prediction System (NGGPS) is currently under development in the US. The high-stake goals of NGGPS require to generate a much-advanced global modeling system with state-of-the-art nonhydrostatic dynamics, physics and data assimilation. Since this modeling system will be used for predictions from storm-scale to seasonal, the selection of the advanced physics parameterizations may be the most challenging task for 2019. One of the physics packages considered as the advanced physics suite - developed at ESRL - includes a unified scale-aware parameterization of subgrid cloudiness feedback to radiation (coupled PBL, microphysics, radiation, shallow convection), a scale- and aerosol-aware convective parameterization, and an aerosol aware microphysics scheme. While the microphysics scheme is currently used in the storm scale RAPid refresh (RAP) and High-Resolution Rapid Refresh (HRRR) operational weather prediction models, the aerosol awareness in the convective parameterization was not yet evaluated. In this presentation we will investigate sensitivities to aerosol concentrations for both, resolved and non-resolved precipitation physics. Aerosol concentrations will be derived from climatologies as well as observed emissions for hind-casts (biomass burning, sea-salt, dust, and anthropogenic emissions).